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REPORT NUMBER 111A

OCTOBER 1963

PLAN FOR PERFORMANCE



LIFT FAN FLIGHT RESEARCH AIRCRAFT PROGRAM

CONTRACT NUMBER DA44-177-TC-715

GENERAL  ELECTRIC

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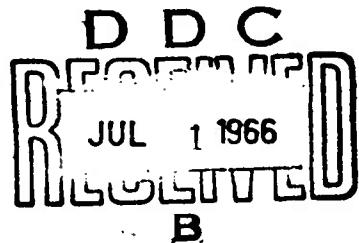
LIFT FAN FLIGHT RESEARCH
AIRCRAFT PROGRAM
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PLAN FOR PERFORMANCE

REPORT 111 A

October, 1963



ADVANCED ENGINE AND TECHNOLOGY DEPARTMENT
GENERAL ELECTRIC COMPANY
Cincinnati, Ohio 45315

MF
2 JUN 1966

PLAN FOR PERFORMANCE

Contract No. DA44-177-TC-715

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INTRODUCTION

This revised Plan For Performance is submitted to reflect the latest information concerning the flight research aircraft useage and the planned milestones to complete this program.

PLAN FOR PERFORMANCE (Revision A)

<u>CONTRACT ITEM</u>	<u>MILESTONE NO.</u>	<u>MILESTONES</u>	<u>PLANNED DATE</u>	<u>ACTUAL DATE</u>
<u>January, 1962</u>				
A-I-(3)	6	Complete preliminary design of the pitch fan system		Jan. 5
A-I-(4)	10	Submit Propulsion System Specification		Jan. 15
<u>February, 1962</u>				
A-I-(4)	10A	Contracting Officer approval of Propulsion System Specification		Feb. 15
A-I-(2)	5	Complete propulsion system design modifications and release 90% of detail design drawings		Feb. 28
A-I-(3)	7	Complete pitch fan system detail design and release 90% of detail design drawings		Feb. 28
A-I-(3)	8	Submit Pitch Fan System Specification for approval		Feb. 28
<u>March, 1962</u>				
A-I-(4)	11	Submit Propulsion System Flight-worthiness Test Specification		Mar. 5
B-III-(3)	67	Submit the planned Simulator Program for approval		Mar. 15
A-I-(3)	9	Submit Pitch Fan Flightworthiness Test Specification		Mar. 23
A-I-(3)	8A	Contracting Officer approval of Pitch Fan Specification		Mar. 29
<u>April, 1962</u>				
B-I-(2)	50	Begin flutter model tests		Apr. 5
A-I-(4)	11A	Contracting Officer Approval of Propulsion System Flightworthiness Test Specification		Apr. 6

<u>CONTRACT ITEM</u>	<u>MILESTONE NO.</u>	<u>MILESTONES</u>	<u>PLANNED DATE</u>	<u>ACTUAL DATE</u>
B-I-(2)	48	Start engine induction inlet model tests		Apr. 11
A-III-(1)	14	Submit Propulsion System Acceptance Specification		Apr. 12
B-III-(3)	67A	Government approval of Simulator Program		Apr. 15
A-II-(2)	20	Submit Pitch Fan System Acceptance Test Specification		Apr. 18
A-I-(3)	9A	Contracting Officer approval of Pitch Fan Flightworthiness Test Specification		Apr. 19
<u>May, 1962</u>				
A-I-(5)	12	Complete propulsion system mock-up		May 10
A-I-(5)	13	Complete pitch fan system mock-up		May 10
A-II-(2)	20A	Contracting Officer approval of Pitch Fan System Acceptance Test Specification		May 28
A-II-(1)	14A	Contracting Officer approval of Propulsion System Acceptance Test Specification		May 29
B-I-(2)	49	Complete tests of engine air flow model		May 29
<u>June, 1962</u>				
A-II-(4)	25A	Prepare 2 YJ85-5 engines		June 1
	54	Start high speed (conventional flight aerodynamic model tests		June 6
	25B	Prepare 2 YJ85-5 engines		June 15
B-III-(8)	80	Provide estimated list of ground support equipment to be furnished for operation of airplane during ground and flight tests		June 15

<u>CONTRACT ITEM</u>	<u>MILESTONE NO.</u>	<u>MILESTONES</u>	<u>PLANNED DATE</u>	<u>ACTUAL DATE</u>
B-IV-(2)	84A	Contracting Officer specify flight test site		June 25
B-I-(2)	52	Begin low speed model tests with operating fans		June 28
B-III-(1)	65	Submit basic Ground Test Plan for approval		June 30
<u>July, 1962</u>				
A-I-(1)	1	Complete preliminary installation study of propulsion system on airplane and release drawing.		July 1
	2	Select main fan inlet and closure configuration		July 1
	3	Select pitch fan inlet and exit configuration		July 1
A-II-(4)	25C	Prepare 2 YJ85-5 engines		July 1
<u>August, 1962</u>				
A-II-(4)	25F	Prepare 4 diverter valves		Aug. 1
B-I-(2)	55	Complete tests of high speed model		Aug. 3
B-I-(4)	57	Conduct inspection of cockpit and partial airplane mock-up		Aug. 3
B-III-(1)	65A	Government approval of basic Ground Test Program		Aug. 14
B-I-(1)	45	Submit Airplane Specification for approval		Aug. 17
B-I-(1)	46	Freeze analytical design of airplane		Aug. 17
B-I-(4)	51A	Government approval of cockpit mock-up		Aug. 31
B-IV-(1)	82	Prepare a basic Flight Test Program Plan		Aug. 31

CONTRACT ITEM	MILESTONE NO.	MILESTONES	PLANNED DATE	ACTUAL DATE
<u>SEPTEMBER, 1962</u>				
A-II-(1)	15	Fabricate and assemble one lift fan (S003)		Sept. 4
A-II-(4)	25D	Prepare 2 J85-5 engines		Sept. 25
A-II-(2)	21	Fabricate and assemble one pitch fan		Sept. 26
<u>OCTOBER, 1962</u>				
B-I-(1)	45A	Contracting Officer approval of Airplane Specification		Oct. 4
B-I-(2)	53	Complete tests of low-speed model		Oct. 16
A-II(4)	25G	Prepare 2 diverter valves		Oct. 31
<u>NOVEMBER, 1962</u>				
A-II-(6)	34	Complete preparation of lift fan ready for official flightworthiness test		Nov. 16
A-II-(7)	36	Complete preparation of pitch fan ready for official flightworthiness test		Nov. 16
	--	Receive second 2 J85 engines		Nov. 23
<u>DECEMBER, 1962</u>				
A-II-(7)	37	Complete pitch fan flightworthiness test		Dec. 8
A-I-(1)	4	Complete Reliability Failure Analysis		Dec. 15
A-II-(4)	25H	Prepare 2 diverter valves		Dec. 28
<u>JANUARY, 1963</u>				
A-II-(1)	16	Fabricate, assemble and acceptance test lift fan (CO04)		Jan. 28
A-II-(2)	22	Fabricate, assemble and acceptance test pitch fan (PF002)		Jan. 28

<u>CONTRACT ITEM</u>	<u>MILESTONE NO.</u>	<u>MILESTONES</u>	<u>PLANNED DATE</u>	<u>ACTUAL DATE</u>
<u>FEBRUARY, 1963</u>				
A-II-(4)	25E	Prepare 2 J85-5 engines		Feb. 11
A-II-(5)	27	Instrument and prepare for shipment lift fan (CO04)		Feb. 15
A-II-(5)	32	Instrument and prepare for shipment pitch fan (PF002)		Feb. 15
B-I-(2)	51	Complete tests of flutter model		Feb. 15
A-II-(1)	16A	Government acceptance of lift fan (CO04)		Feb. 18
A-II-(2)	22A	(Movement acceptance of pitch fan (PF002)		Feb. 18
<u>MARCH, 1963</u>				
A-IV-(4)	42	Deliver Propulsion System O&M Instructions		Mar. 5
A-IV-(5)	43	Deliver Pitch Fan O&M Instructions		Mar. 5
A-II-(3)	24	Preparation of Spare Parts Inventory List		Mar. 8
A-II-(1)	17	Fabricate, assemble and acceptance test lift fan (SO05)		Mar. 21
A-II-(2)	23	Fabricate, assemble, and acceptance test pitch fan (PF003)		Mar. 21
A-II-(1)	17A	Government acceptance of lift fan (SO05)		Mar. 25
<u>APRIL, 1963</u>				
A-II-(5)	28	Instrument and prepare for shipment lift fan (SO05)		Apr. 3
A-II-(1)	19	Fabricate, assemble and acceptance test lift fan (SO07)		Apr. 10

<u>CONTRACT ITEM</u>	<u>MILESTONE NO.</u>	<u>MILESTONES</u>	<u>PLANNED DATE</u>	<u>ACTUAL DATE</u>
A-II-(6)	35	Complete lift fan flightworthiness test		Apr. 10
A-III-(2)	40	Complete fabrication of special tools and ground handling equipment required for field maintenance of lift, and pitch fans		Apr. 10
A-II-(1)	18	Fabricate, assemble, and acceptance test lift fan (CO06)		Apr. 26
A-II-(6)	35A	Government acceptance of lift fan flightworthiness test		Apr. 26
A-II-(7)	37A	Government acceptance of pitch fan flightworthiness test		Apr. 26
B-I-(3)	56	Complete design of flight test instrumentation system and release 90% of detail design drawings		Apr. 30

MAY, 1963

B-II-(1)	58	Complete fabrication of all major airplane tooling	May 3
A-II-(1)	18A	Government acceptance of lift fan (CO06)	May 22
A-II-(1)	19A	Government acceptance of lift fan (SO07)	May 22
A-II-(2)	23A	Government acceptance of pitch fan (PF003)	May 22
A-II-(5)	30	Instrument and prepare for shipment lift fan (SO07)	May 28

JUNE, 1963

A-II-(5)	29	Instrument and prepare for shipment lift fan (CO06)	June 4
A-II-(5)	33	Instrument and prepare for shipment pitch fan (PF003)	June 4

<u>CONTRACT NO.</u>	<u>MILESTONE NO.</u>	<u>MILESTONES</u>	<u>PLANNED DATE</u>	<u>ACTUAL DATE</u>
<u>JULY, 1963</u>				
B-II-(1)	59	Number 1 airplane ready for static testing		July 15
B-III-(5)	73	Complete fabrication of test fixtures and equipment required for Static Test Program		July 23
B-II-(1)	61	Complete wings, tail and fuselage shell of #2 airplane		July 31
<u>AUGUST, 1963</u>				
B-III-(6)	75	Complete static structural tests of complete airplane		Aug. 20
<u>SEPTEMBER, 1963</u>				
B-III-(5)	72	Complete fabrication of major test fixtures and equipment for component test program		Sept. 12
B-II-(2)	63	Complete installation of basic flight test instrumentation in #2 airplane		Sept. 23
<u>OCTOBER, 1963</u>				
B-IV-(1)	83	Submit detailed flight test plan for approval		Oct. 22
B-III-(6)	77.0	Complete ground resonance test #2 A/C		Oct. 31
<u>NOVEMBER, 1963</u>				
B-III-(2)	66	Complete all component integrity and reliability tests		Nov. 1
A-II-(2)	21A	Government acceptance of pitch fan (PFOOL)		Nov. 15
B-III-(6)	77.1	Start systems functional test #2 A/C		Nov. 26

<u>CONTRACT NO.</u>	<u>MILESTONE NO.</u>	<u>MILESTONES</u>	<u>PLANNED DATE</u>	<u>ACTUAL DATE</u>
<u>NOVEMBER, 1963</u>				
B-IV-(1)	83A	Government approval of detailed flight test plan	Nov. 26	
		Receive approval for revised Plan for Performance	Nov. 26	
<u>DECEMBER, 1963</u>				
B-III-(6)	76.0	Complete systems function test #1 A/C	Dec. 4	
B-III-(6)	76.1	Complete engine run and modify A/C #1 as result of ground tests	Dec. 11	
A-II-(1)	15A	Government acceptance of lift fan (SO03)	Dec. 15	
A-II-(5)	31	Instrument and Prepare for shipment pitch fan (PFO01)	Dec. 16	
B-II-(1)	60.0	Completion of No. 1 A/C ready for full scale wind tunnel test	Dec. 19	
B-II-(1)	60.1	Ship No. 1 A/C to NASA Ames	Dec. 19	
B-III-(6)	77.2	Complete system functional test No. 2 A/C	Dec. 19	
A-III-(1)	38	Complete preparation of full scale wind tunnel test plan	Dec. 20	
B-III-(8)	81	Complete fabrication or procurement of all ground support equipment	Dec. 20	
B-II-(2)	64	Install flight test instrumentation in No. 2 A/C	Dec. 27	
	26	Instrument and prepare for shipment lift fan (SO03)	Dec. 30	
B-III-(7)	79.0	All flight clearance reports submitted for low speed fan and conventional flight.		Dec. 31

<u>CONTRACT NO.</u>	<u>MILESTONE NO.</u>	<u>MILESTONES</u>	<u>PLANNED DATE</u>	<u>ACTUAL DATE</u>
<u>JANUARY, 1964</u>				
B-III-(6)	77.3	Complete engine run and modify A/C No. 2 as result of ground tests	Jan. 3	
B-II-(1)	62.0	Ship No. 2 A/C to Edwards AFB	Jan. 8	
B-IV-(2)	85	Start Flight Test Program	Jan. 10	
B-II-(1)	62.1	No. 2 A/C ready for ground and taxi tests	Jan. 11	
B-IV-(6)	94	Deliver Instructions for Operation and Maintenance of Airplane and Sub-system.	Jan. 15	
B-III-(6)	77.4	Complete thrust stand and preflight tests on No. 2 A/C	Jan. 17	
B-III-(5)	74	Complete fabrication of test fixtures and equipment required for full scale wind tunnel test program	Jan. 20	
B-III-(7)	79.1	Request clearance for No. 2 A/C for low speed fan and conventional flight	Jan. 20	
B-III-(7)	79A	Government approval and low speed flight clearance of No. 2 A/C	Jan. 27	
<u>FEBRUARY, 1964</u>				
B-IV-(2)	86	Demonstrate hover	Feb. 2	
B-III-(4)	70	Complete full scale wind tunnel test on No. 1 airplane	Feb. 21	
B-III-(3)	68	Complete a simulation study based on inputs derived from engineering analysis and scale model wind tunnel tests to provide predicted flight characteristics	Feb. 15	

<u>CONTRACT NO.</u>	<u>MILESTONE NO.</u>	<u>MILESTONES</u>	<u>PLANNED DATE</u>	<u>ACTUAL DATE</u>
<u>FEBRUARY, 1964</u>				
B-III-(4)	70.1	No. 1 airplane returned for flight test	Feb. 29	
B-III-(7)	79.2	All flight clearance reports submitted for high speed conventional flight	Feb. 29	
<u>MARCH, 1964</u>				
B-III-(7)	78	Request flight clearance low and high speed for No. 1 A/C	Mar. 9	
B-III-(7)	79.3	Request flight clearance, high speed for No. 2 A/C	Mar. 9	
B-IV-(2)	89	Start flight program on No. 1 A/C	Mar. 13	
B-III-(7)	78A	Government approval and flight clearance, of No. 1 A/C	Mar. 16	
B-III-(7)	79B	Government approval and flight clearance, high speed, No. 2 A/C	Mar. 16	
B-III-(6)	76.2	Complete pre-flight tests on No. 1 A/C	Mar. 23	
<u>APRIL, 1964</u>				
B-IV-(2)	87	Demonstrate vertical take-off and transition to wing supported flight and from wing supported flight to fan support and vertical landing	Apr. 17	
B-III-(4)	71	Complete analysis of full scale wind tunnel data	Apr. 30	
<u>MAY, 1964</u>				
NONE				

<u>CONTRACT NO.</u>	<u>MILESTONE NO.</u>	<u>MILESTONES</u>	<u>PLANNED DATE</u>	<u>ACTUAL DATE</u>
<u>JUNE, 1964</u>				
B-IV-(2)	88	Demonstrate aircraft structural integrity throughout approved flight envelope.		June 10
B-IV-(2)	90	Complete Flight Test Program		June 26
<u>JULY, 1964</u>				
B-IV (5)	93	Complete modifications to both A/C to final flight configurations		July 3
A-IV-(6)	44	Complete any minor modifications in propulsion system and pitch fan system required during flight tests		July 15
A-IV-(2)	41	Complete engineering and maintenance support of propulsion systems during the flight test program.		July 15
B-IV-(3)	91	Complete preliminary analysis of flight test data		July 17
<u>AUGUST, 1964</u>				
B-I-(2)	47	Complete reliability and failure analysis		Aug. 15
B-IV-(4)	92	Submit substantiating data to enable Government flightworthiness evaluation for subsequent testing by Government pilots		Aug. 15

**SPECIFICATIONS AND TEST PROGRAMS
REQUIRING GOVERNMENT APPROVAL**

<u>SPECIFICATION</u>	<u>SUBMITTED DATE</u>	<u>APPROVAL REQUIRED</u>
1. Plan for Performance (Report No. 111) (Report No. 111A)		Feb. 13, 1962 Nov. 26, 1963
2. Propulsion System Specification (Spec. #112)		Feb. 15, 1962
3. Pitch Fan System Specification (Spec. #113)		Mar. 29, 1962
4. Propulsion System Flightworthiness Test Specification (Spec. #114)		Apr. 6, 1962
5. Pitch Fan Flightworthiness Test Specification (Spec. #115)		Apr. 19, 1963
6. Propulsion System Acceptance Test Specification (Spec. #116)		May 29, 1962
7. Pitch Fan Acceptance Test Specification (Spec. #117)		May 28, 1962
8. Airplane Detail Specification (Spec. #118)		Oct. 4, 1962
9. Ground Test Program (Report 119)		Aug. 14, 1962
10. Simulator Test Program (Report 120)		Apr. 15, 1962
11. Flight Test Program (Report #129)	Oct. 22, 1963	Nov. 26, 1963
12. Request to Clear Aircraft No. 1 for Flight	Mar. 9, 1964	Mar. 16, 1964
13. Request to Clear Aircraft #2 for First Flight	Jan. 20, 1964	Jan. 27, 1964

CONTRACT REQUIRED REPORTS

FINAL TECHNICAL REPORTS

SUBMISSION DATE

Pronulsion & Pitch Fan Sub-Program Design & Engineering	Apr. 30, 1964
Flightworthiness Test	Nov. 15, 1963
Full Scale Wind Tunnel Test Report	Apr. 30, 1964
Detail Flight Test Procedure	Oct. 22, 1963
Installed Systems Test Procedure	Nov. 4, 1963
Conventional Model Wind Tunnel Test Report	Nov. 14, 1963
Fan Powered Model Wind Tunnel Test Report	Nov. 4, 1963
Wing Basic Structure	Oct. 29, 1963
Empenage Structural Analysis	Nov. 29, 1963
Fuselage Structural Analysis & Sub Systems	Dec. 16, 1963
Wing Flap, Aileron, Fittings Structure	Dec. 16, 1963
Main Landing Gear Structural Analysis	Nov. 29, 1963
Heat Transfer & Cooling Analysis	Dec. 31, 1963
Installed Systems Functional Test	Jan. 25, 1964
Predicted Performance Characteristics	Dec. 16, 1963
Inlet Model Wind Tunnel Test Report	Dec. 21, 1963
Ground Vibration Test Procedures and Results	Dec. 31, 1963
Predicted Noise and Vibration Characteristics	Dec. 31, 1963
Load Analysis	Dec. 25, 1963
Calculated Weights, Balance, and Moments of Intertia	Dec. 28, 1963
Estimated Static Stability Characteristics	Dec. 31, 1963
Calculated Installed Engine Performance	Dec. 31, 1963
Control System Structural Analysis	Dec. 31, 1963
Structural Test Procedures & Results	Dec. 31, 1963
Flutter Model Wind Tunnel Test Report	Jan. 17, 1964
Preliminary Calculated Flutter Analysis	Feb. 15, 1964
Calculated Dynamic Stability Characteristics	Feb. 28, 1964
Predicted Flying Qualities	Feb. 28, 1963
Aircraft Operating Instructions Manual	Jan. 29, 1964
Final Systems Analysis & Simulation	Feb. 28, 1964

CONTRACT REQUIRED REPORTS

FINAL TECHNICAL REPORTS

SUBMISSION DATE

Aircraft Fabrication, Assembly, and Inspection	Mar. 29, 1964
Final Calculated Flutter Analysis	Apr. 15, 1964
Final Weight and Balance	Aug. 15, 1964
Final Flightworthiness Summary & Reliability Report	Aug. 29, 1964
Final Flight Test Report	Aug. 29, 1964
Final A/C Detail Specification	Sept. 15, 1964

QUARTERLY TECHNICAL PROGRESS REPORTS

SUBMITTAL DATE

No.	1	2	3	4	5	6	7	8	9	10	11	(Summary)	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	10010	10011	10012	10013	10014	10015	10016	10017	10018	10019	10020	10021	10022	10023	10024	10025	10026	10027	10028	10029	10030	10031	10032	10033	10034	10035	10036	10037	10038	10039	10040	10041	10042	10043	10044	10045	10046	10047	10048	10049	10050	10051	10052	10053	10054	10055	10056	10057	10058	10059	10060	10061	10062	10063	10064	10065	10066	10067	10068	10069	10070	10071	10072	10073	10074	10075	10076	10077	10078	10079	10080	10081	10082	10083	10084	10085	10086	10087	10088	10089	10090	10091	10092	10093	10094	10095	10096	10097	10098	10099	100100	100101	100102	100103	100104	100105	100106	100107	100108	100109	100110	100111	100112	100113	100114	100115	100116	100117	100118	100119	100120	100121	100122	100123	100124	100125	100126	100127	100128	100129	100130	100131	100132	100133	100134	100135	100136	100137	100138	100139	100140	100141	100142	100143	100144	100145	100146	100147	100148	100149	100150	100151	100152	100153	100154	100155	100156	100157	100158	100159	100160	100161	100162	100163	100164	100165	100166	100167	100168	100169	100170	10017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OPERATION AND MAINTENANCE INSTRUCTIONS

Propulsion System
Pitch Fan System
Airplane

SUBMITTAL DATE

Mar. 5, 1963
Mar. 5, 1963
Jan. 31, 1964

PERCENTAGE BREAKDOWN OF WORK BY TASK

Task	A-I	13%
	A-II	33
	A-III	4
	A-IV	2
	B-I	20
	B-II	22
	B-III	3
	B-IV	3
		<hr/>
		100%

Monthly letters will report progress against the above Task percentages